

REMARKS

Claims 1-20 will be pending upon entry of the present amendment. Claims 17-20 are new. No new matter is being presented.

One embodiment of the instant invention provides a powerful digital signal processing (DSP) device that runs a plurality of encoders and/or decoders (codecs) to process a plurality of different audio signals or channels in real-time. Such a method or system is implemented by providing two areas of memory. The first area is used as program memory to simultaneously run a plurality of re-entrant instances of a codec instruction code program that process a plurality of signals. The second memory area includes a plurality of memory segments each of which is used for storing data used by a corresponding codec program instance running in the first memory area.

Claims 1-2, 5-9 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (6,201,488 B1).

Sato describes a DSP that can consecutively execute a plurality of different codec algorithms without restriction of a memory capacity. Sato, col. 2, lines 5-9. Sato teaches a program memory storing a codec program divided into a plurality of smaller block programs, with a "program changing unit" loading a new block program in program memory after a previously loaded block program has completed execution. Sato, col. 2, lines 15-29. Sato later teaches this process in more detail, describing how a block program of one codec program only begins execution after the final block program of another codec program has completed. Sato, col. 6, lines 52-60.

Sato does not teach or suggest the invention in claim 1, which recites "implementing a plurality of codecs using the DSP by running said instruction code program in said first memory a plurality of times in re-entrant instances." As acknowledged by the Examiner, Sato does not expressly teach implementing plural codecs using the DSP by running an instruction code program in a first memory plural times in re-entrant instances. Instead, Sato is directed to a single CODEC (see first

sentence of Abstract) that uses that uses plural programs operating consecutively rather than concurrently as with re-entrant instances.

The applicants respectfully disagree with the Examiner's statement that Sato suggests implementing plural codecs using re-entrant instances of a program code. Sato describes a DSP that can execute the "same program by referring to different work data." Sato, col. 7, lines 44-45. Neither those lines nor any other portion of Sato suggest that the same program should execute in plural "re-entrant instances" as described in claim 1. Instead, those lines only imply that the program completes execution after processing one block of data then executes again to process a different block of data. This is especially apparent in light of Sato, col. 6, lines 42-65, which describes a program loading process where individual block programs (subprograms of Sato's whole codec program) are "sequentially rewritten" into program memory, the program loader replacing one block program entirely with another new block program only after the first block program has completed execution. Such sequential processing of different blocks of data does not imply that plural re-entrant instances could or should be used.

The applicants submit that Figure 8 of Sato, which is referenced in column 7, also does not suggest plural re-entrant instances. Figure 8 shows an external ROM 81 that includes three programs A, B, and C. It does not show three instances of program A, three instances of program B, and three instances of program C. Instead, it shows that program C is loaded into the RAM 40 during a first phase, program B is loaded during a second phase, and program A is loaded during a third phase. The solid line from program C to the program load controller 70, together with the dashed lines from programs A and B to the program load controller, appear to show that only one copy of one program is loaded at a time.

Accordingly, claim 1 is nonobvious in light of Sato.

Claims 2 and 5-7 are dependent on claim 1, and thus, are also non-obvious.

Although the language of claims 8-9 and 12-14 is not identical to that of claims 1-2 and 5-7, the nonobviousness of claims 8-9 and 12-14 will be apparent in view of the above discussion.

Claims 3-4, 10-11 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Klaas et al (6,628,999 B1).

Sato and Klaas do not teach or suggest the invention recited in claims 3-4 and 10-11, which depend on claims 1 and 8, respectively. In particular, Klaas does not teach or suggest the "plural codecs" and "plural re-entrant instances" features of claims 1 and 8. Instead, Klaas teaches a system and method based on a single codec program executing alone. Klaas, col. 12, lines 16-55. As such, claims 3-4 and 10-11 are nonobvious in view of Sato and Klaas.

Although the language of claims 15 and 16 is not identical to that of claims 3-4 and 10-11, the nonobviousness of claims 15-16 will be apparent in view of the above discussion.

New claims 17-20 each depend on one of claims 15-16, and thus, are nonobvious for the reasons expressed above with respect to claims 15-16.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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